

REMARKS

Claims 1-7, 10-16, 18 and 21 are pending in the subject application. Claim 1 is the sole independent claim.

A. Introduction

In the outstanding Office Action Made Final:

1. claims 1, 3-7, 12-16, 18 and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2003/0192686 to Hisai et al. (“the Hisai et al. reference”) in view of U.S. Patent No. 5,413,167 to Hara et al. (“the Hara et al. reference”); and
2. claims 2, 10 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Hisai et al. reference as modified by the Hara et al. reference and further in view of U.S. Patent No. 3,621,906 to Leffert (“the Leffert reference”).

B. Asserted Obviousness Rejection of Claims 1, 3-7, 12-16, 18 and 21

In the outstanding Office Action Made Final, claims 1, 3-7, 12-16, 18 and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Hisai et al. reference in view of the Hara et al. reference. This rejection is respectfully traversed for at least the reasons set forth below.

In order to establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a), a rejection must establish (i) some objective teaching in the prior art or knowledge generally available to one of ordinary skill in the art that would motivate or suggest to an individual to modify the relevant teachings of the cited reference(s),¹ and (ii) that the cited reference(s) must teach or suggest all of the claim limitations of the rejected claims.² Applicants respectfully submit that the outstanding rejection fails to establish both required criteria. In particular, the outstanding Office action fails to demonstrate that one of ordinary skill in the art would have been motivated to modify the Hisai et al. reference in view of the Hara et al.

¹ See *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. at __, 82 USPQ2d at 1396 (2007).

² See *In re Vaeck*, 947, F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

reference in the manner used to reject the claims, and fails to teach or suggest all of the claim limitations.

(a) Failure to Establish a Proper Motivation to Combine

In the outstanding Office action, with respect to independent claim 1, the Hisai et al. reference is indicated as lacking a disclosure of, *inter alia*, a heatpipe using vaporization of a coolant, a coolant storage tank, and a thermostatic element.³ The Hara et al. reference is then relied on as teaching the above-mentioned missing elements from the Hisai et al. reference, and asserted as a reference that would have been obvious to combine with the Hisai et al. reference by one of ordinary skill in the art “in order to maintain the wafer at a constant temperature, thus preventing deformation in the circuitry of the wafer.”⁴ Applicants respectfully disagree.

Applicants respectfully submit that there is no motivation or suggestion to combine the Hisai et al. reference and the Hara et al. reference because the proposed combination would change the principle of operation of the baking system of the Hisai et al. reference⁵, thereby, contrary to §2143.01 of the MPEP, requiring a substantial redesign of the baking system of the Hisai et al. reference. In particular, applicants respectfully note that the primary reference cited in the outstanding Office action of June 25, 2008, i.e., the Hisai et al. reference, teaches a heater surrounded by liquid in a lower portion of a holding table, so steam generated by the heater and liquid can spread into an inner space of the table to heat a surface of the table.⁶ Applicants further note that the Hara et al. reference teaches supply of a coolant liquid into an inner space of a wafer chuck to cool the wafer.⁷ Applicants respectfully submit that incorporating the coolant system of the Hara et al. reference, i.e., supply of a coolant into an inner space of a wafer support, into the baking system of the Hisai

³ The Office action of June 25, 2008, at page 3.

⁴ *Id.*

⁵ MPEP, §2143.01, paragraph VI.

⁶ The Hisai et al. reference, FIG. 3; paragraph [0056].

⁷ The Hara et al. reference, FIG. 9 and corresponding text.

et al. reference, i.e., heating a wafer via steam in an inner space of a wafer support, would require a substantial reconstruction and redesign of the baking system of the Hisai et al. reference.

In particular, incorporation of a coolant system requiring use of a liquid in an inner space of a heatpipe, i.e., coolant system of the Hara et al. reference, would flood the inner space 12 of the housing 1h with liquid (see FIG. 3 of the Hisai et al. reference), thereby interfering with operation of the heater 15 in the liquid room 14. Accordingly, the heater 15 of the baking system of the Hisai et al. reference would require a substantial redesign and reconstruction in order to support the coolant system of the Hara et al. reference. Further, the cooling system of the Hisai et al. reference would have to be substantially redesigned and reconstructed because use of a liquid coolant, i.e., as taught by the Hara et al. reference, in an inner space filled with steam, i.e., as taught by the Hisai et al. reference, may provide insufficient vaporization for the purpose of cooling.⁸ Accordingly, applicants respectfully reiterate that one of ordinary skill in the art would not have been motivated to modify the coolant system of the Hisai et al. reference according to the coolant system of the Hara et al. reference.

(b) Failure to Establish a Proper *Prima Facie* Case of Obviousness

Applicants further respectfully submit that even if, *arguendo*, one of ordinary skill in the art were to attempt to combine the teachings of the Hisai et al. reference with the Hara et al. reference, the resultant combination would fail to teach each and every element recited in claim 1. More specifically, independent claim 1 recites that a baking system includes a cooling apparatus with, *inter alia*,

⁸ Applicants respectfully point out that in order for a liquid to evaporate in a closed space filled with steam, (i) the steam must be unsaturated and (ii) the closed space must have sufficient volume to contain both steam and evaporated liquid.

a heatpipe for cooling the plate using vaporization of a coolant therein, the heatpipe arranged in proximity to the plate with the *heater disposed therebetween*;

a coolant storage tank for supplying the coolant into the heatpipe when the plate is cooled and *for storing the coolant supplied to the heatpipe when the plate is heated*; and

a thermostatic element for maintaining an approximately constant temperature *of the coolant supplied into the heatpipe* when the plate is cooled.

It is admitted in the outstanding Office action that the Hisai et al. reference fails to teach a heatpipe using vaporization of a coolant, a coolant storage tank, and a thermostatic element.⁹ Applicants respectfully submit that the Hara et al. reference fails to teach or even remotely suggest at least (i) a heatpipe ... arranged in proximity to the plate with the *heater disposed therebetween*, (ii) a coolant storage ... *for storing the coolant supplied to the heatpipe when the plate is heated*, and (iii) a thermostatic element for maintaining an approximately *constant temperature of the coolant supplied into the heatpipe* when the plate is cooled.

In particular, applicants respectfully point out that no teaching exists in the cited references regarding a heater between the heatpipe and the plate. Further, applicants respectfully point out that no teaching exists in the cited references regarding storage of the coolant in a tank during heating, e.g., to enable baking. In this respect, applicants respectfully point out that the Hara et al. reference fails to teach storing the coolant supplied to the heatpipe when the plate is heated because the coolant system of the Hara et al. reference teaches maintaining sufficient liquid in the wafer chuck 91 to *prevent* overheating and drying out.¹⁰

In addition, applicants respectfully submit that no teaching exists in the cited references regarding a thermostatic element that maintains constant temperature of the

⁹ The Office action of June 25, 2008, at page 3.

¹⁰ *The Hara et al. reference*, col. 10, lines 10-40.

coolant supplied into the heatpipe when the plate is cooled. In this respect, applicants respectfully point out that the Hara et al. reference teaches a heat exchanger 2 that maintains a constant temperature of the heat exchanger 2 and contact portions 22 of each of pipes 3 and 4.¹¹ Applicants respectfully submit that the heat exchanger 2 *does not affect the temperature of the coolant, i.e., operative liquid, in the heatpipe, i.e., interior of wafer chuck 91*. In fact, the Hara et al. reference clearly states that after the operative liquid is vaporized and expands into the heat exchanger, the resultant liquefied liquid does not go back to the wafer chuck 91.¹²

In view of the above, applicants respectfully reiterate that the references cited in the outstanding Office action, whether alone or in combination, fail to teach each and every element of claim 1, and therefore, claim 1 is allowable over the cited references. Claims 3-7, 12-16, 18 and 21 depend from claim 1, and therefore, are allowable for at least the same reasons as claim 1 is allowable. Accordingly, applicants respectfully request favorable reconsideration and withdrawal of the rejection of claims 1, 3-7, 12-16, 18 and 21.

C. Asserted Obviousness Rejection of Claims 2, 10 and 11

In the outstanding Office Action Made Final, claims 2, 10 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Hisai et al. reference as modified by the Hara et al. reference and further in view of the Leffert reference.

The Leffert reference fails to cure the deficiencies of the Hisai et al. reference and the Hara et al. reference as set forth above regarding claim 1. Accordingly, claims 2, 10 and 11, which depend from claim 1, are allowable for at least the reasons claim 1 is allowable. Accordingly, applicants respectfully request that this rejection be favorably reconsidered and withdrawn.

¹¹ *Id.*, at col. 6, lines 7-10.

¹² *Id.*, at col. 10, lines 1-7.

D. Withdrawal of Finality of Outstanding Office Action

It is respectfully submitted that the new grounds of rejection of the pending claims over the newly cited Hisai et al. reference as modified by the Hara et al. reference were not necessitated by the amendment filed on January 17, 2008. In particular, the language used as the basis for the new rejection under 35 U.S.C. § 103(a) was present in the original claims. Therefore, the new grounds for rejection were not necessitated by the previous amendment, and the finality appears to be premature.

E. Conclusion

The above remarks point out the fatal deficiencies of the outstanding rejections, and are sufficient to overcome them. However, while these remarks may refer to particular claim elements, they are not intended to, nor need they comprehensively address each and every reason for the patentability of the claimed subject matter over the applied art. Accordingly, applicants respectfully submit that the claims are allowable for reasons including, but not limited to, those set forth above, and that the patentability of the claims does not depend solely on the particular claim elements discussed above.

The remaining document cited in the Office action was not relied on to reject the claims. Therefore, no comments concerning this document are considered necessary at this time.

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

In view of the foregoing amendments and remarks, reconsideration of this application is earnestly solicited, and an early and favorable further action upon all the claims is hereby requested.

Respectfully submitted,

LEE & MORSE, P.C.

Date: August 26, 2008



Susan S. Morse, Reg. No. 35,292

LEE & MORSE, P.C.
3141 FAIRVIEW PARK DRIVE
SUITE 500
FALLS CHURCH, VA 22042
703.207.0008 TEL
703.207.0003 FAX

PETITION and
DEPOSIT ACCOUNT CHARGE AUTHORIZATION

This document and any concurrently filed papers are believed to be timely. Should any extension of the term be required, applicant hereby petitions the Director for such extension and requests that any applicable petition fee be charged to Deposit Account No. 50-1645.

If fee payment is enclosed, this amount is believed to be correct. However, the Director is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-1645.

Any additional fee(s) necessary to effect the proper and timely filing of the accompanying-papers may also be charged to Deposit Account No. 50-1645.